Florida Standards Assessments

Algebra 2

FSA Mathematics

Practice Test Questions

The purpose of these practice test materials is to orient teachers and students to the types of questions on paper-based FSA tests. By using these materials, students will become familiar with the types of items and response formats they may see on a paper-based test. The practice questions and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. The practice test is not intended to guide classroom instruction.

Directions for Answering the Mathematics Practice Test Questions

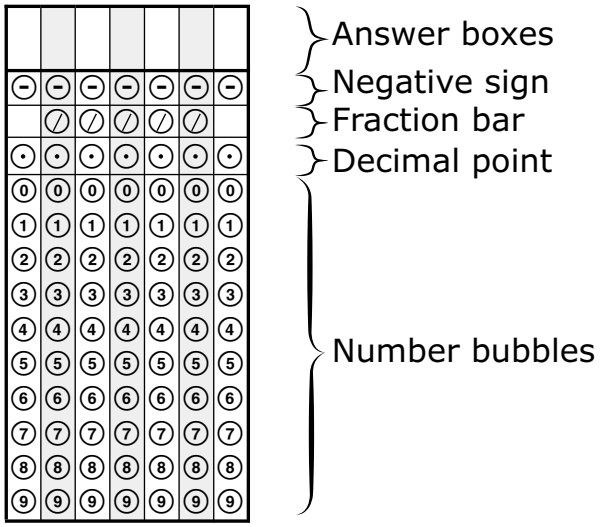
If you don't know how to work a problem, ask your teacher to explain it to you. Your teacher has the answers to the practice test questions.

You may need formulas and conversions to help you solve some of the problems. You may refer to the Reference Sheets on pages 5–7 as often as you like.

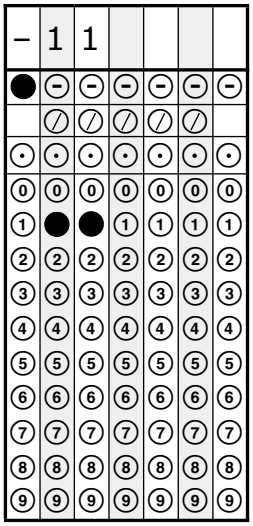
Use the space in your Mathematics Practice Test Questions booklet to do your work.

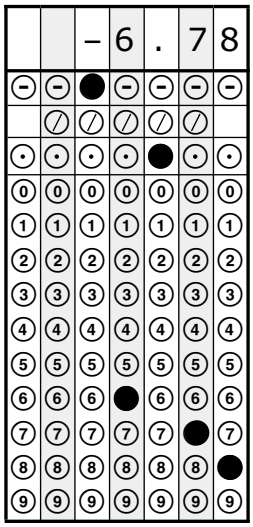
Directions for Completing the Response Grids

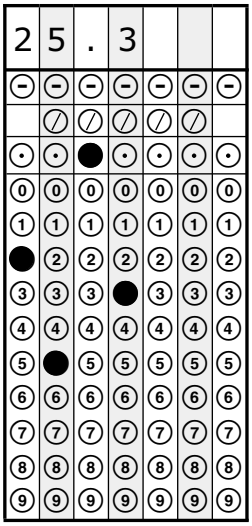
1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
    - Write your answer with the first digit in the left answer box OR with the last digit in the right answer box.
    - Write only one digit or symbol in each answer box. Do NOT leave a blank answer box in the middle of an answer.
    - Be sure to write a decimal point, negative sign, or fraction bar in the answer box if it is a part of the answer.
3. Fill in a bubble under each box in which you wrote your answer.
    - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
    - Fill in each bubble by making a solid mark that completely fills the circle.
    - You MUST fill in the bubbles accurately to receive credit for your answer.

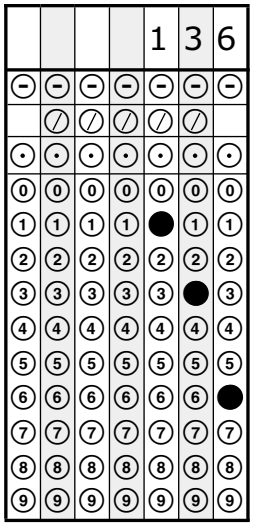


When a percent is required to answer a question, do NOT convert the percent to its decimal or fractional equivalent. Grid in the percent value without the % symbol. Do the same with dollar amounts.





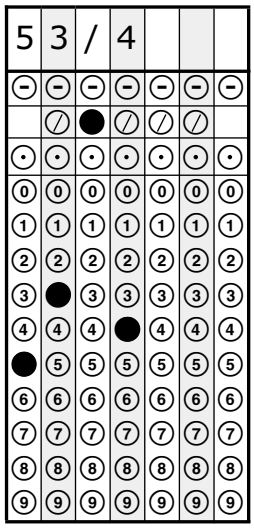




Do NOT write a mixed number, such as $13\frac{1}{4}$, in the answer boxes.

Change the mixed number to an equivalent fraction, such as $\frac{53}{4}$, or to an equivalent decimal, such as 13.25. Do not try to fill in $13\frac{1}{4}$, as it would be read as $\frac{131}{4}$ and would be counted wrong.

CORRECT **INCORRECT**



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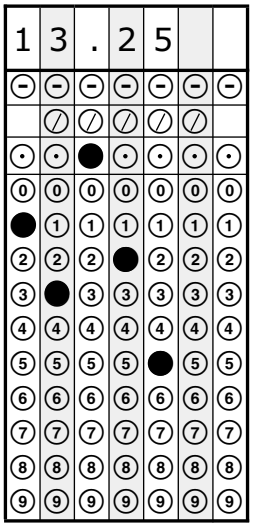
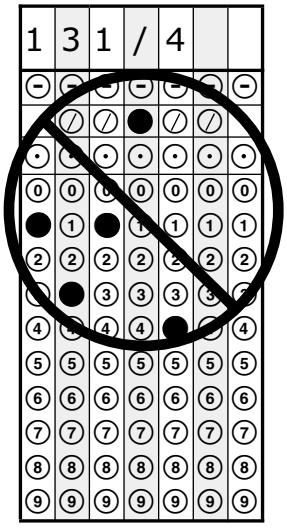




Algebra 2 EOC FSA Mathematics Reference Sheet

Customary Conversions

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5,280 feet
1 mile = 1,760 yards

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

Metric Conversions

1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Time Conversions

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 year = 365 days
1 year = 52 weeks

Algebra 2 EOC FSA Mathematics Reference Sheet

Formulas

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$, where a, b, and c are coefficients in an equation of the form $ax^2 + bx + c = 0$

$\log_b a = \frac{\log a}{\log b}$

$\sin A° = \frac{\text{opposite}}{\text{hypotenuse}}$

$\cos A° = \frac{\text{adjacent}}{\text{hypotenuse}}$

$\tan A° = \frac{\text{opposite}}{\text{adjacent}}$

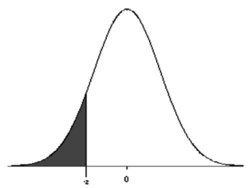
$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$z = \frac{(x - \mu)}{\sigma}$, where μ = mean and σ = standard deviation

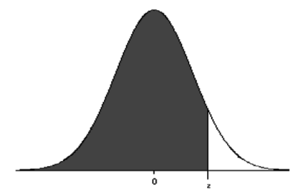
Algebra 2 EOC FSA Mathematics Reference Sheet

Table of Standard Normal Probabilities for Negative z-scores



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

Table of Standard Normal Probabilities for Positive z-scores



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998

$$z = \frac{(x - \mu)}{\sigma}, \text{ where } \mu = \text{mean and } \sigma = \text{standard deviation}$$

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Session 1

Use the space in this booklet to do your work. For multiple-choice items, fill in one bubble for the correct answer. For editing task choice items, matching items, and multiselect items, fill in the bubbles for all of the correct answers. For items with response grids, refer to the Directions for Completing the Response Grids on pages 3 and 4. If you change your answer, be sure to erase completely. Calculators are NOT permitted for Session 1 of this practice test.

1. Match each complex expression with its value.

	3	**$-4i$**	**$5 + 5i$**
$3i(i + 2i^3)$	Ⓐ	Ⓑ	Ⓒ
$2i + i^2(5i^2 - 3i)$	Ⓓ	Ⓔ	Ⓕ
$i^2(3i^2 + 1) + 1$	Ⓖ	Ⓗ	Ⓘ

Go On

2. Choose the correct word or phrase to fill in each blank. For each blank, fill in the circle **before** the word or phrase that is correct.

Ethan was solving $2.71x^3 + 8.64 = 3.12$.

Ethan's first step resulted in $2.71x^3 = -5.52$ because he applied the _____.

Ⓐ addition property of equality

Ⓑ substitution property

Ⓒ multiplicative property of equality

Ethan should then _____.

Ⓐ find the cube root

Ⓑ use the multiplicative property of equality

Ⓒ use the distributive property

Go On

3. The table shows information about 10 students in Mrs. McKeon's calculus class.

Name	Gender	In Math Club?
Alexa	Female	Yes
Carlos	Male	Yes
Keisha	Female	Yes
Kumiko	Female	No
Lisette	Female	No
Michael	Male	Yes
Paolo	Male	No
Radha	Female	Yes
Thomas	Male	No
Xavier	Male	Yes

Mrs. McKeon randomly picks two students to present a homework problem. She defines two events as shown.

- Event *E*: A male and a female are selected.
- Event *F*: Both of the students are in the math club.

Select all the sets of students that are in the complement of the union of events *E* and *F*.

Ⓐ Lisette and Thomas

Ⓑ Keisha and Kumiko

Ⓒ Radha and Thomas

Ⓓ Carlos and Michael

Ⓔ Kumiko and Lisette

Ⓕ Paolo and Xavier

Go On

4. Jared is opening several ice cream stores. The walls of the stores can be yellow or blue. He designs an experimental study to determine if the color of the walls affects how much ice cream people eat.

Jared finds 164 volunteers. He randomly assigns half of them to a room with yellow walls and lets them eat as much chocolate ice cream as they want for one hour. He assigns the other half to a room with blue walls and lets them eat as much vanilla ice cream as they want for one hour.

Jared records the total amount of ice cream eaten in each room.

What is one flaw in Jared's study?

Ⓐ There are too many volunteers.

Ⓑ The room assignments were random.

Ⓒ The groups had different flavors of ice cream.

Ⓓ The groups did not have different numbers of volunteers.

Go On

This is the end of Session 1.

Session 2

Use the space in this booklet to do your work. For multiple-choice items, fill in one bubble for the correct answer. For editing task choice items, matching items, and multiselect items, fill in the bubbles for all of the correct answers. For items with response grids, refer to the Directions for Completing the Response Grids on pages 3 and 4. If you change your answer, be sure to erase completely. Scientific calculators may be used for Session 2 of this practice test.

5. A coffee machine makes one cup of coffee at a time. The amount of coffee the machine makes can be selected before the coffee is made. Jerry selects the coffee machine's 14.5-ounce option for his 16-ounce cup. The amount of coffee, in ounces, in his cup at time x is given by the function $C(x) = -0.4x^2 + 5.06x$, where x is in minutes.

What is the largest domain for which $C(x)$ models the amount of coffee in a cup?

Ⓐ $0 \leq x \leq 4.4$

Ⓑ $0 \leq x \leq 8.25$

Ⓒ $0 \leq x \leq 14.5$

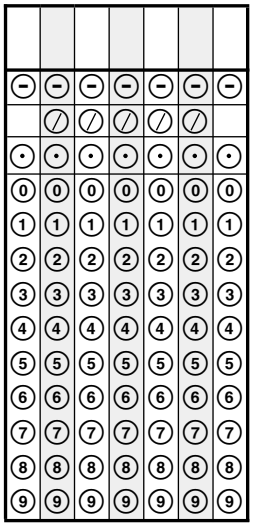
Ⓓ $0 \leq x \leq 16$

Go On

6. The number of *Salmonella* bacteria, y, in a sample after M minutes can be found using the equation shown.

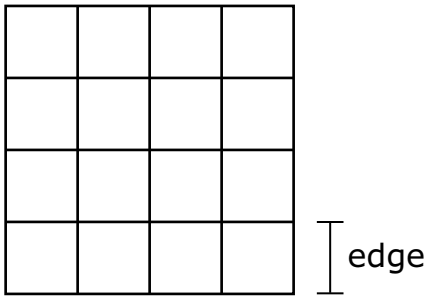
$$y = 1{,}200\left(2^{\frac{20}{60}M}\right)$$

To the nearest tenth of a minute, how many minutes will it take for the sample to have 100,000 bacteria?



Go On

7. Mike creates a design for a square kitchen floor. Each tile measures 1 foot square. An example of the design is shown.



Mike found that the expression $4n + 2n^2 - 2n$ would give the total number of edges for a design of any size, where n is the length, in feet, of one side of the design.

Select an expression and an explanation to match the meaning of the value the expression represents.

Expression	Explanation
Ⓐ n	Ⓐ area of the design
Ⓑ $2n$	Ⓑ perimeter of the design
Ⓒ $2n^2 - 2n$	Ⓒ number of edges in one row of the design
Ⓓ $4n + 2n^2$	Ⓓ number of edges inside the design

Go On

8. Amanda bought a new car for $17,850. Her new car will lose 11% of its value the moment she drives the car off the car dealership's lot. Over the next five years, Amanda's car will depreciate 20.5% each year. After five years, her car will hold its value at 27% of its original cost.

Select the appropriate definition and domain for the variable x for the equation that models the value of Amanda's car, C. Then, select the correct equation.

A. Select a definition for the variable x.

Ⓐ x is the number of years since Amanda's car left the car dealership's lot.

Ⓑ x is the number of years since the value of Amanda's car reached 20.5% of its original cost.

Ⓒ x is the number of years Amanda's car was at 27% of its original cost.

B. Select the domain that best fits the situation.

Ⓐ all real numbers

Ⓑ $0 \leq x \leq 5$

Ⓒ $x \geq 0$

C. Select the equation that can be used to model the value of Amanda's car.

Ⓐ $C = 17{,}850\,(1 - 0.585)^x$

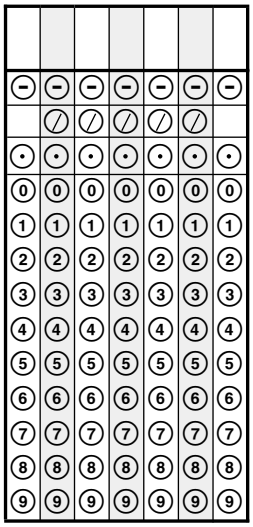
Ⓑ $C = 15{,}886.5\,(1 - 0.205)^x$

Ⓒ $C = 6{,}604\,(1 - 0.27)^x$

Go On

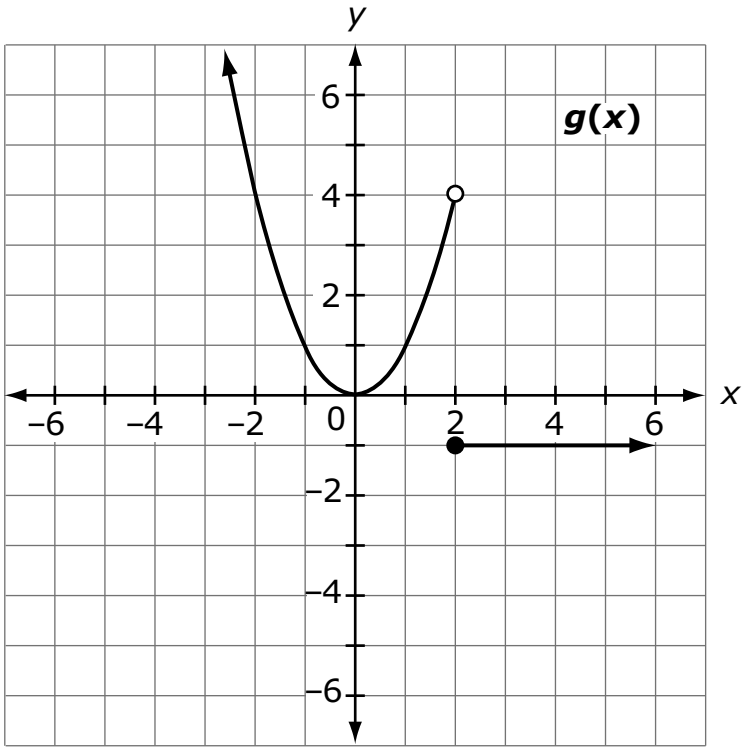
9. The mean population of the counties in Florida is 289,294 and the standard deviation is 461,176. It can be assumed that the population is approximately normally distributed.

What percentage of the population of all counties is within one standard deviation of the mean?



Go On

10. Solve $f(x) = g(x)$, to the nearest tenth, where $f(x) = e^x - 2.4$ and $g(x)$ is shown.



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	⁄	⁄	⁄	⁄	⁄	
·	·	·	·	·	·	·
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

Go On

11. A wheel of Matthew's bicycle has a radius of 1 foot. He uses chalk to create a marking on the outer edge of the wheel. Matthew rides his bicycle at a constant speed so that the wheel rotates 3 times every second.

Which function, $h(t)$, represents the height, in feet, of the marking from the ground with respect to time, t, in seconds?

Ⓐ $h(t) = \sin\left(\frac{2\pi}{3}t\right)$

Ⓑ $h(t) = \sin\left(\frac{2\pi}{3}t\right) + 1$

Ⓒ $h(t) = \sin(6\pi t)$

Ⓓ $h(t) = \sin(6\pi t) + 1$

Go On

This is the end of Session 2.

Office of Assessment
Florida Department of Education, Tallahassee, Florida